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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,499	09/22/2004	Mark Yamazaki	81102778 / FMC 1781 PUS	5498

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EXAMINER	
PIGGUSH, AARON C	

ART UNIT	PAPER NUMBER
2838	

MAIL DATE	DELIVERY MODE
11/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,499	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Aaron Piggush	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the appeal filed on August 21, 2008, PROSECUTION IS HEREBY REOPENED. To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution.

Akm Ullah

SPE, AU 2838

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (US 6,960,152) in view of Taga (US 5,873,801).

With respect to claim 1, Aoki discloses a method of controlling charging of a power source of a hybrid vehicle, the hybrid vehicle comprising a set of power sources including a primary power source and at least one secondary power source, and an electrical machine adapted to be driven by at least one member of the set of power sources, the method comprising: determining an output torque level of the primary power source (Fig. 12, col 11 ln 32-49, and col 22 ln 29-47); determining a state of charge of the secondary power source (col 8 ln 35-38); determining a charge torque modifier value based on the output torque level and the state of charge (col 11 ln 15-64, col 22 ln 39-59, col 24 ln 38-55, and col 2 ln 19-36); determining a target torque level for the electrical machine based on the charge torque modifier value (col 11 ln 23-49, col 24 ln 64 to col 25 ln 48, and col 2 ln 19-36); and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source (col 22 ln 39-59 and col 11 ln 15-64).

However, Aoki does not expressly disclose wherein the output torque level determined is a maximum output torque level. Although, it should be noted that there are multiple maximum outputs on the graph of Fig. 12, depending on the accelerator pedal position AP and the engine rotational speed NE (please also see the clarification in the response to arguments below). Regardless, to clarify the use of a "maximum output torque level", Aoki is combined with Taga below to more explicitly meet this requirement.

Taga discloses determining a maximum output torque of a primary power source in a vehicle (s110 in Fig. 5, col 13 ln 66 to col 14 ln 19, and col 14 ln 45-60), in order to allow the device to output power generated by the primary power source at a higher efficiency (col 1 ln 55-60 and abstract).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to include the determination of a maximum torque for use in the calculations of Aoki, as did Taga, so that the device could more accurately determine what limits could be used/expected with regard to the torque levels (helps allow the device to output specified power at a higher efficiency).

With respect to claim 2, Aoki discloses wherein the step of determining the output torque level further includes determining whether the primary power source is providing output torque (col 10 ln 60 to col 11 ln 53).

With respect to claim 3, Aoki discloses wherein the step of determining the charge torque modifier value further comprises comparing a state of charge of the secondary power source to a threshold value and selecting a first adjustment value if the state of charge is less than the threshold value and selecting a second adjustment value if the state of charge is not less than the threshold value (col 11 ln 15-64 and Fig. 7).

With respect to claim 4, Aoki discloses wherein the first adjustment value is greater than the second adjustment value (col 29 ln 3-14 and col 11 ln 15-64). Please note that there are multiple adjustment values wherein as the SOC becomes less, the charge/discharge requirement (which affects the charge torque modifier) becomes greater.

With respect to claims 5 and 6, Aoki discloses wherein the first adjustment value is a constant based on the output torque level and the second adjustment value is based on the output torque level and the state of charge (col 29 ln 3-14 and ln 22-34 and col 11 ln 15-64). Please note that the claim language does not require that the second adjustment value is not a constant or that the first adjustment value cannot also be based on the state of charge.

With respect to claim 7, Aoki discloses wherein the second adjustment value decreases linearly as the state of charge increases (col 29 ln 3-14 and ln 22-34 and col 11 ln 15-64). The "linearly" term is reasonably met by the reference because his equations for the requirement outputs/torques are all linear based equations, implying that any adjustment values will also be linear in nature.

With respect to claims 8 and 16, Aoki discloses wherein the step of determining a charge torque modifier value is based on the state of charge and an actual output torque of the primary power source (col 11 ln 15-64, col 22 ln 39-59, col 24 ln 38-55, and col 2 ln 19-36), however, does not expressly disclose wherein the actual output torque is expressed as a percentage of the maximum output torque level.

Although, it should be noted that it is well known to one of ordinary skill in the art that expressing values as a percentage involves simple mathematical computations, wherein any ratio between two different values represents a percentage. It does not appear that the applicant has disclosed that expressing the output torque as a percentage of the maximum output torque level solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with using the actual output torque.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to express the actual output torque as a percentage of the maximum output torque level in the device of Aoki, so that a simplified value could be displayed to or collected by the driver/user of the device (providing more information during control of the vehicle).

With respect to claims 9 and 10, Aoki discloses wherein the primary power source is an internal combustion engine (no. 11 in Fig. 6, col 1 ln 9-25, and well known that hybrid vehicles

use an internal combustion engine) and wherein the at least one secondary power source is a battery (no. 43 in Fig. 6, col 1 ln 9-25, and well known that hybrid vehicles use a battery as a power source).

With respect to claims 11 and 12, Aoki discloses wherein the electrical machine is a starter-alternator and wherein the electrical machine is a motor-generator (no. 25 and 16 in Fig. 6 and Fig. 15-17). To clarify, it is well known that motors of vehicles include a starter and that AC generators and alternators are synonymous (all of which are found in hybrid vehicles).

With respect to claims 13 and 14, please see the rejection of claims 1-7 above. Additionally, the determination of whether the electrical machine is being driven by the engine and is charging the power source is also met (no. 51, 44, 46, 47, and 49 in Fig. 6, Fig. 7, and col 11 ln 15-64).

With respect to claim 15, please see the rejection of claim 1 above.

With respect to claim 17, please see the rejection of claims 1-7, 13, and 8 above. Furthermore, the provision of a consistent level of vehicle acceleration as the accelerator pedal is actuated is also met (col 1 ln 51 to col 2 ln 63 and Fig. 26 and 28).

With respect to claims 18-20, please see the rejection of claims 3-6 above.

Response to Arguments

4. Applicant's arguments filed August 21, 2008 are considered moot under the new grounds of rejection or have been considered and addressed previously (repeated below for the applicant's convenience). Furthermore, the examiner believes that the citations provided above and below are not overly broad and do show that the prior art discloses the limitations provided

by the current claim language presented by the applicant (wherein when multiple paragraphs are cited, it is deemed necessary for the proper understanding of the subject matter included in the references).

With respect to claim 1, applicant argues that Aoki does not disclose determining a maximum output torque level of the primary power source.

Examiner respectfully disagrees for the following reasons: Aoki has been combined with Taga to explicitly meet the requirement of a "maximum output torque level" (see the rejection above). Furthermore, the examiner also included Fig. 12 in the citation for the rejection of claim 1, wherein the applicant states "note the higher torque curves in Fig. 12" when referring to the comparison of engine torque TE1 to TE3. If the higher torque curves of Fig. 12 are considered to be maximums by the applicant, then why wouldn't they meet the requirement of determining a maximum output torque. Regardless, Taga has been included in the rejection of the claims to more clearly meet this requirement.

Also concerning Aoki, the relation between the output torque level and controlling charging of a power source is clearly mentioned in the citations provided in the office action, focusing on col 11 ln 15-31, wherein it is stated that a battery **charge**/discharge requirement output calculation processing mechanism ... to calculate a battery **charge**/discharge requirement output PB based on the battery remaining charge SOC by reading the battery remaining SOC from the battery remaining charge detection device … a vehicle requirement output calculation processing mechanism ... calculates a vehicle requirement output PO = PD +PB" (PD is the driver requirement output). The PO calculation is used in the determination of the target torque

and rotational speed of the vehicle. Along with the explanation above, please note col 11 ln 50-64 and col 22 ln 39-59, and col 2 ln 19-36 for further clarification of the torque modifier value.

With respect to claim 2, the citation 10 ln 60 to col 11 ln 53 recites "… then the vehicle control device determines whether the engine is stopped." This is part of the determination of whether the primary power source is providing output torque or not.

With respect to claim 3, Aoki discloses calculating a battery charge/discharge requirement (col 11 ln 15-64), including determination of the remaining charge SOC (please also see the response to the arguments for claim 1 above). This requirement is used in the determination of the vehicle output requirement, which is used in the determination of the target torque and rotational speed. There are clearly multiple adjustment values dealing with the battery needing to be charged and dealing with the battery needing/able to be discharged (otherwise, how would the system know if the battery should be charged or if it could be discharged, and the basis of the SOC determination would serve no purpose). Adjustment values can also be seen by the description that "… when the battery remaining charge SOC becomes less, the battery charge/discharge requirement output PB becomes greater" (col 29 ln 3-14).

With respect to claim 4, concerning the applicant's argument that the examiner's statement is not explicitly or implicitly disclosed in Aoki, please see the above response with emphasis on col 29 ln 4-6.

With respect to claims 5 and 6, please see the above responses. As noted in the previous rejection, the claim language does not require that the second adjustment value is not a constant or that the first adjustment value cannot also be based on the state of charge.

With respect to claim 7, the argument that Aoki's relationship between the values is opposite of claim 7 is deemed incorrect. Just because the battery charge/discharge requirement output PB becomes greater as the battery SOC becomes less, that does not mean that the relationship between the two is not linear. For example, the equations $y = x + b$ and $y = -x + b$ are both linear equations, even though they have opposite slopes.

With respect to claims 13-15, the subject matter of those claims is disclosed in the citations presented in the rejections of claims 1-7, regardless of slight variations in the wording. The determination of whether the electrical machine is being driven by the engine and is charging the power source is met by the additional citation provided in the previous office action (no. 51, 44, 46, 47, and 49 in Fig. 6, Fig. 7, and col 11 ln 15-64).

With respect to claims 8 and 16, the previous rejection provided that it is obvious to express a value as a percentage, since it involves only simple mathematical computations, wherein any ratio between the two different values represents a percentage. The values necessary for representing this percentage are seen in the Aoki reference (see rejection of claims above). This was made under a U.S.C. 103 rejection, wherein it was also stated that it does not appear that the applicant has disclosed that expressing the output torque as a percentage of the maximum output torque level solves any stated problem or is for any particular purpose, and it appears that the invention would perform equally well with using the actual output torque.

With respect to claim 17, the subject matter of that claim is disclosed in the citations presenting in the rejections of claims 1-7, 8, and 13, regardless of slight variations in the wording. The provision of a consistent level of vehicle acceleration as the accelerator pedal is

actuated is met by the additional citation provided in the previous office action (col 1 ln 51 to col 2 ln 63 and Fig. 26 and 28).

With respect to claims 18 and 19, although the language presented is not identical to the previous claims rejected, the subject matter is. The citations provided in the previous rejections of the related claims are still deemed to meet the claim language presented by the applicant.

With respect to claim 20, please see the response to arguments above, emphasizing claims 3-6.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tabata (US 6,672,415) discloses a torque control technique related to multiple power sources and Tsuzuki (US 5,903,061) discloses a control system for a vehicle wherein the output torque is adjusted based on target output torque.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is (571)272-5978. The examiner can normally be reached on Monday-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art Unit 2838

/A. P./
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